WHAT IS CLAIMED IS:

1. An optical fiber which has a dispersion value at a 1.55 μm-wavelength band, of 6 to 24 ps/nm/km, and satisfies $A > 3 \times D + 40$, where D represents a dispersion value (ps/nm/km) at a central wavelength of a 1.55 μm-wavelength band, and A represents an effective core area (μm^2).

2. An optical fiber according to claim 1, wherein a dispersion value at a 1.55 μm-wavelength band is 17 to 24 ps/nm/km, an effective core area at a central wavelength of a 1.55 μm-wavelength band is 95 μm^2 or more, and a bending loss at a bending diameter of 20 mm is 20 dB/m or less, and which operates in a single mode at a 1.55 μm-wavelength band.

3. An optical fiber according to claim 1, wherein a dispersion value at a 1.55 μm-wavelength band is 14 to 17 ps/nm/km, an effective core area at a central wavelength of a 1.55 μm-wavelength band is 90 μm^2 or more, and a bending loss at a bending diameter of 20 mm is 20 dB/m or less, and which operates in a single mode at a 1.55 μm-wavelength band.

4. An optical fiber according to claim 1, wherein a dispersion value at a 1.55 μm-wavelength band is 6 to 14 ps/nm/km, an effective core area at a central wavelength of a 1.55 μm-wavelength band is 75 μm^2 or more, and a bending loss at a bending diameter of 20 mm is 20 dB/m or less, and which operates in a single mode

at a 1.55 μm-wavelength band.

5. An optical fiber according to any one of claims 1 to 4, wherein a dispersion slope (unit: $ps/nm^2/km$) at a 1.55 μm-wavelength band is 0.08 or less in absolute value.

6. An optical fiber according to any one of claims 1 to 4, wherein a transmission loss at a central wavelength of a 1.55 μm-wavelength band is 0.25 dB/km or less, and a polarization mode dispersion value is 0.15 $ps/km^{1/2}$ or less.

7. An optical fiber according to any one of claims 1 to 4, wherein a transmission loss at an entire wavelength band of 1.55 μm is 0.25 dB/km or less.

8. An optical fiber according to any one of claims 1 to 4, which comprises a single layer core and clad, and has a refractive index profile of a single peaked structure, and which satisfies $0.2\% \leqq \Delta 1 \leqq 0.35\%$ where $\Delta 1$ is a relative refractive index difference of the core with reference to the refractive index of the clad.

9. An optical fiber according to any one of claims 1 to 4, which comprises a single layer core and clad, and has a refractive index profile of a single peaked structure, and which satisfies $0.2\% \leqq \Delta 1 \leqq 0.6\%$ where $\Delta 1$ is a relative refractive index difference of the core with reference to the refractive index of the clad, and satisfies $1 \leqq \alpha \leqq 6$ where α is a value

obtained when the refractive index profile is approximated with an α curve.

10. An optical fiber according to any one of claims 1 to 4, which comprises a center core, a side core and a clad in order from an inner side, and has a refractive index profile of a two-layer core type, and which satisfies $0.2\% \leqq \Delta 1 \leqq 0.35\%$ and $-0.3\% \leqq \Delta 2 < 0$ where $\Delta 1$ is a relative refractive index difference of the center core, with reference to the refractive index of the clad, and $\Delta 2$ is a relative refractive index difference of the side core, with reference to the refractive index of the clad, and satisfies $0.3 \leqq a/b \leqq 0.7$ where a represents an outer diameter of the center core and b represents an outer diameter of the side core.

11. An optical fiber according to any one of claims 1 to 4, which comprises a center core, a side core and a clad in order from an inner side, and has a refractive index profile of a two-layer core type, and which satisfies $0.2\% \leqq \Delta 1 \leqq 0.7\%$ and $-0.3\% \leqq \Delta 2 \leqq -0.1\%$ where $\Delta 1$ is a relative refractive index difference of the center core, with reference to the refractive index of the clad, and $\Delta 2$ is a relative refractive index difference of the side core, with reference to the refractive index of the clad, and satisfies $0.3 \leqq a/b \leqq 0.7$ where a represents an outer diameter of the center core and b represents an outer

diameter of the side core, and satisfies $1 \leqq \alpha \leqq 6$ where α is a value obtained when the refractive index distribution is approximated with an α curve.

12. An optical fiber according to any one of claims 1 to 4, which comprises a center core, a side core and a clad in order from an inner side, and has a refractive index profile of a two-layer core type, and which satisfies $0.2\% \leqq \Delta 1 \leqq 0.35\%$ and $0 < \Delta 2 < \Delta 1$ where $\Delta 1$ is a relative refractive index difference of the center core, with reference to the refractive index of the clad, and $\Delta 2$ is a relative refractive index difference of the side core, with reference to the refractive index of the clad, and satisfies $0.3 \leqq a/b \leqq 0.7$ where a represents an outer diameter of the center core and b represents an outer diameter of the side core.

13. An optical fiber according to any one of claims 1 to 4, which comprises a center core, a side core and a clad in order from an inner side, and has a refractive index profile of a two-layer core type, which satisfies $0.2\% \leqq \Delta 1 \leqq 0.7\%$, $0.1\% \leqq \Delta 2 \leqq 0.3\%$ and $\Delta 1 > \Delta 2$ where $\Delta 1$ is a relative refractive index difference of the center core, with reference to the refractive index of the clad, and $\Delta 2$ is a relative refractive index difference of the side core, with reference to the refractive index of the clad, and satisfies $0.3 \leqq a/b \leqq 0.7$ where a represents an outer

diameter of the center core and b represents an outer diameter of the side core, and satisfies $1 \leqq \alpha \leqq 6$ where α is a value obtained when the refractive index profile is approximated with an α curve.

14. An optical fiber according to claim 13, wherein at least a part of the side core has a refractive index variation portion.

15. An optical fiber according to any one of claims 1 to 4, which comprises a center core, a side core and a clad in order from an inner side, and has a refractive index profile of a two-layer core type, which satisfies $0.6\% \leqq \Delta 2 \leqq 1.0\%$ and $-1.2 \leqq \Delta 1/\Delta 2 \leqq -0.4$ where $\Delta 1$ is a relative refractive index difference of the center core, with reference to the refractive index of the clad, and where $\Delta 2$ is a relative refractive index difference of the side core, with reference to the refractive index of the clad, and satisfies $0.3 \leqq a/b \leqq 0.7$ where a represents an outer diameter of the center core and b represents an outer diameter of the side core.

16. An optical fiber according to any one of claims 1 to 4, which comprises a center core, a first side core, a second side core and a clad in order from an inner side, and has a refractive index profile of a three-layer core type, and which satisfies $0.6\% \leqq \Delta 2 \leqq 1.0\%$, $-1.2 \leqq \Delta 1/\Delta 2 \leqq -0.4$ and $0.2 \leqq \Delta 2/\Delta 3 \leqq 0.6$ where $\Delta 1$ is a relative refractive index difference of

the center core, with reference to the refractive index of the clad, $\Delta 2$ is a relative refractive index difference of the first side core, with reference to the refractive index of the clad, and $\Delta 3$ is a relative refractive index difference of the second side core, with reference to the refractive index of the clad, and satisfies $0.3 \leqq a/b \leqq 0.7$ and $0.2 \leqq a/c \leqq 0.5$ where a represents an outer diameter of the center core, b represents an outer diameter of the first side core, and c represents an outer diameter of the second side core.

17. An optical fiber according to claim 16, wherein at least a part of the second side core has a refractive index variation portion.

18. An optical transmission line for transmitting an optical signal, which includes an optical fiber, wherein at least a part of the optical fiber has a dispersion value at a 1.55 μm-wavelength band, of 6 to 24 ps/nm/km, and satisfies $A > 3 \times D + 40$, where D represents a dispersion value (ps/nm/km) at a central wavelength of a 1.55 μm-wavelength band, and A represents an effective core cross sectional area (μm^2).